

# **EXHIBIT G**

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**SEPTEMBER 20, 1994, TUESDAY****SECTION: IN THE NEWS****LENGTH:** 2121 words

**HEADLINE:** PREPARED TESTIMONY OF DR. ERIC SCHMIDT  
CHIEF TECHNICAL OFFICER, SUN MICROSYSTEMS, INC,  
BEFORE THE **SENATE JUDICIARY COMMITTEE**,  
ANTITRUST, TECHNOLOGY AND LAW SUBCOMMITTEE

**BODY:**

Interoperability and the National Information Infrastructure

I would like to thank Senator Leahy and Senator Metzenbaum for inviting me to testify before their committees today. This hearing will contribute greatly to the debate on how the Government can help make sure that all Americans have an opportunity to participate in the new Information Age.

Overview

Although the National and Global Information Infrastructure (NII and GII, respectively) will evolve over the rest of this decade, a number of key architectural and regulatory decisions and international agreements made in the coming months will shape a much longer future. Among these decisions and agreements are those which will define the degree of access and interoperability allowed, and whether monopoly control of critical interfaces will be permitted to limit that access and interoperability. The telecommunications reform bill (HR 3626) passed by the House of Representatives several months ago recognized the importance of this issue. The House bill simply and reasonably asked the FCC to study the issue, and make recommendations. Now, as the Senate deliberates telecommunications reform legislation and the NII, a number of companies are attempting to block that FCC study in a bold-faced attempt to be in a position to create their own monopoly bottlenecks to the network of the coming Information Age. We urge that you reject that effort.

Vision

The NII and GII will be a network of networks, connecting multiple sources of data, education, services and entertainment, with homes, schools, hospitals, libraries, businesses and governments. It will be, in essence, a distributed library of digital information, with distributed borrowers and lenders. A library with instantaneous, global access. The socioeconomic impact of this global digital superhighway is widely expected to equal or exceed the impact of previous physical superhighways, such as the world's railroads, the Suez and Panama canals, the United States' interstate highway system, or Germany's autobahn. In the case of networks, bigger is better. Access to more information is of greater value than access to less information. Similarly, access by more individuals and companies, is of greater value than access by fewer. Interoperability is the key to making this network of networks, bigger, better, sooner. Sun's view is simply stated: To attract the substantial private investment required, to encourage free-market competition, and to enable universal access by the greatest number of information consumers and providers in the shortest time frame, interoperability will be achieved by making the critical interface specifications barrier-free.

Access and Interoperability

Interfaces are connection points. Access to any network is achieved through its interfaces. For example: on the interstate highway, it is through on-ramps and off-ramps; on the telephone system, access is through telephone jacks and switches. For a public information infrastructure, there are a handful of critical interface points: between information sources and networks, between networks, between networks and information hubs, between operating systems and devices, between applications and operating systems, and between remote controls or input/output devices and the hardware.

Devices attached to this network will derive a large portion of their value from their ability to tie into a vast and rapidly expanding global information network. And remember these devices will be able to send as well as receive digital data.

For the NII network to achieve its economic potential - to attract broad economic participation, investment and usage - barrier-free access must exist at each of these critical interfaces.

When we discuss interfaces, it is important to carefully note the distinction between an interface specification, and an actual product which has interfaces that conform to the specification. Interface specifications are merely the words that describe the interface which allows two components to work together [or interoperate]. They are not blueprints, nor recipes for actual products. Let me repeat that: interface specifications are not blueprints, nor recipes for making knock-offs or clones. Sun and many other firms in highly competitive industries believe in protection of products but also believe that no one individual or company should own the rights to interface specifications for a public network, such as the NII. (Or for other public infrastructure networks. Can you imagine charging auto makers a fee to let them know the load-bearing capacity of the cement in the interstate? Or charging ship builders a fee to know the width of the locks on the Panama Canal? Or charging electric appliance makers a fee to know the voltage of electric currents flowing across the national power grid? Or locomotive makers a fee to design railroad cars for a certain gauge track?) With respect to intellectual property rights, Sun strongly believes in -- and will defend -- the rights of intellectual property owners to maximize their returns on product implementations. At the same time, we believe that interface specifications are not protectable under copyright. The leading federal appellate court case, *Computer Associates v. Altai* and the cases which follow it, all reinforce the separation of the interface from the implementation. The interface, as an element necessary for interoperability, falls into the category of ideas which the copyright law seeks to disseminate to promote the public good. This in no way curtails the protectability of the code itself.

Other forms of intellectual property law -- notably patent -- may grant varying degrees of intellectual property protection to interfaces. In these cases, barrier free access to interfaces contemplates that the government will seek to encourage the market to arrive at open standards, failing which, with respect to interfaces determined to be critical to the NII, the government, in consultation with private sector interested parties, should establish conditions which result in nondiscriminatory access and ability to use such interfaces for a truly nominal consideration.

Barrier-free access provides the opportunity for new and existing businesses to develop and sell: network pieces and time, information storage and retrieval devices and services, viewing and computing devices, device operating systems and applications, set-top boxes and information hubs, TVs and telephones, and hundreds or thousands of devices and services yet to be imagined!

It is this type of broad economic participation which is vital to the growth of a commercially and socioeconomically valuable, national information infrastructure. And it is this activity which is threatened by those who would seek to limit access to the network by erecting barriers to the network's critical interfaces.

#### Barriers to Competition

What are these barriers? How does monopoly control of an interface specification create a choke point to access and economic participation? Companies sometimes claim to have built intellectual property into an interface specification itself - then they limit access (completely or partially) to the specification to keep out competitors, or charge fees that reduce the economic viability of potential competitors. In short, they create economic entry barriers for potential competitors.

Economic competition requires the existence of substitute products or services. And in a network like the NII, control of any of the critical interfaces could - by definition prevent the development of competing products or services by creating barriers to the information necessary for interoperability. Lack of economic substitutes would then result in monopolies. It is important to understand that innovation, competition, and economic investment would be stimulated by a policy requiring barrier-free interface specifications for critical access points to the NII. Proprietary rights to product implementations are a prerequisite for investment - but proprietary control of the interface specification is not! Arguments to the contrary mix up the distinction between interface specifications and product implementations, in an attempt to retain or regain monopoly control to limit competition.

The value of the NII will lie in the amount of information it makes accessible, and the number of people who have access to that information. These are the

factors which will attract private investment. Monopoly control of interface specifications would have just the opposite effect, by limiting the number of competing, interoperable products and services, thereby reducing usage and artificially sustaining higher prices. In many competitive industries today - not just those involving public infrastructure networks - vast sums of money are invested by competing companies that make products that conform to barrier-free interface specifications. For example, no one company owns the ISO specification for 35mm film that allows multiple camera and film makers to compete with each other while still making interoperable products. In the computer industry today, the single most commonly used networking specification is a protocol called TCP/IP. Owned by no one, most of the major computer makers invest large sums of R&D dollars each year to make their own TCP/IP products better, yet still remain compliant with the barrier-free specification to ensure interoperability. When Sun and others propose that critical interfaces to the NII should be barrier-free, we mean that their specification should be available for anyone to use. Everyone should be entitled to design and build compliant products that can interoperate with the NII. Monopoly control of any critical interface specification would limit that ability, greatly impair competition, retard technical innovation, slow the growth of the NII, and limit its economic value. Interoperability is crucial for all potential information users and providers, but none more so than for rural areas, schools and hospitals. These are among the constituents that the opponents of Section 405 of the House bill seek to disconnect from interoperable network access. No one should be shunted to a network backwater that offers access to only a limited subset of distributed information resources -- especially these groups! Sun does not stand alone in its support for interoperability and its concern about the amendments under consideration. Among the other companies and organizations that have expressed similar concerns are: Accolade, Inc., the Center for Media Education, the Center for the Study of Responsive Law, the Consumer Federation of America, the Computer and Communications Industry Association, Oracle Corporation, the SoftwareEntrepreneurs Forum, Stellar One Corporation, Storage Technology Corporation and 3Corn Corporation. The Consortium for Citizens with Disabilities (CCD) has also expressed concern about the impact of the proposed amendments dealing with interoperability. The CCD, in particular is concerned about the impact that these amendments could have on the development of adaptive software and hardware produced by third parties for people with disabilities. There has also been significant support for the compromise crafted by Congressman Markey that was included in the final version of H.R. 3626. In addition to the 420 Representatives of the House that voted in favor of it, and the companies and organizations already mentioned, the House language was supported by the Electronics Industries Association, Media Access Project, People for the American Way, and numerous other organizations. In addition to these efforts, the Computer Systems Policy Project, made up of the CEOs from the 13 largest computer manufacturing companies in the US, have explicitly stated that interoperability is a requirement for both the national and global information infrastructure. Sun agrees.

Conc/usion

The Global Information Infrastructure will be the greatest information resource the world has seen since the ancient Library at Alexandria. To achieve this destiny, the United States' national information infrastructure must be accessible to all potential information users and information providers, without artificial barriers erected by would-be monopolists.

History records the Library at Alexandria as one of the seven wonders of the ancient world. Here -- today -- you have the opportunity to lay the groundwork for the first wonder of the 21 st century. If we allow the NII to be any less, because of the monopoly designs of the few, what will history have to say of us in 2000 years?

Thank you.

END

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